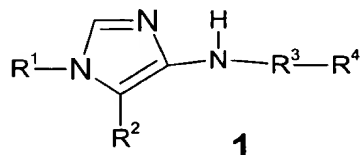


IMIDAZOLE DERIVATIVES

Abstract

The invention provides compounds of formula 1



- 5 wherein R¹, R², R³, and R⁴ are as defined, and their pharmaceutically acceptable salts. Compounds of formula 1 are indicated to have activity inhibiting cdk5, cdk2, and GSK-3. Pharmaceutical compositions and methods comprising compounds of formula 1 for treating and preventing diseases and conditions comprising abnormal cell growth, such as cancer, and neurodegenerative diseases and conditions and those affected by dopamine
- 10 neurotransmission. Also described are pharmaceutical compositions and methods comprising compounds of formula 1 for treating male fertility and sperm motility; diabetes mellitus; impaired glucose tolerance; metabolic syndrome or syndrome X; polycystic ovary syndrome; adipogenesis and obesity; myogenesis and frailty, for example age-related decline in physical performance; acute sarcopenia, for example muscle atrophy and/or cachexia
- 15 associated with burns, bed rest, limb immobilization, or major thoracic, abdominal, and/or orthopedic surgery; sepsis; hair loss, hair thinning, and balding; and immunodeficiency.

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